REMARKS

Reconsideration of the application in view of the above amendments and the following remarks is requested. Claims 1-27 are in this application. Claim 1 has been amended, not to overcome prior art, but to alternately recite the present invention. Claims 21-27 have been added to alternately recite the present invention.

The Examiner objected to the drawings under 37 CFR §1.83(a) because the drawings do not show a memory that stores a first identification number that represents a first optical device that is associated with a network end point, and a second identification number that represents a second optical device that is associated with the network end point.

Applicant notes that applicant's FIG. 2 shows an example of a memory as a table 212 that has slots for storing a number of network end points, a number of active identity numbers which are associated with the network end points, and a number of standby identity numbers which are also associated with the network end points.

However, in order to further prosecution, applicant's specification has been amended to list reference numerals for the active identity numbers (AN1-ANr) of the optical network terminals ONT1-ONTr used at the network end points, the ranges (RG1-RGr) to the optical network terminals ONT1-ONTr, and the transmission delays (TD1-TDr) assigned to the optical network terminals ONT1-ONTr.

In addition, FIG. 2 has been amended as shown in red to place the reference numerals for the network end points (EP1-EPn), the active identity numbers (AN1-ANr), the ranges (RG1-RGr), and the transmission delays (TD1-TDr) in table 212. Amended FIG. 2 is attached in Appendix A, and a replacement sheet for FIG. 2 is attached in Appendix B. As a result, the drawings are believed to satisfy the requirements of 37 CFR §1.83(a).

The Examiner rejected claims 11-20 under 35 U.S.C. §112, first paragraph, and claims 11 and 18 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Specifically, the Examiner argued that there is no support in the originally-filed specification for the limitation that only one optical device is connected to the network end point at a time as recited by claim 11.

However, from what applicant can determine, claim 11 satisfies the written description requirement. For the claims to satisfy the written description requirement of the first paragraph of §112, applicant's originally-filed specification must provide adequate support for the subject matter recited in the claims. ["("The question raised by these situations is most often phrased as whether the application provides 'adequate support' for the claim(s) at issue."); In re Wright, 866 F.2d 422, 424, 9 USPQ2d 1649, 1651 (Fed. Cir. 1989).

In addition, the originally-filed specification does not need to recite the exact same language as is used in the claims. ("The disclosure as originally filed does not, however, have to provide in haec verba support for the claimed subject matter," Cordis Corp. v. Medtronic AVE, Inc., 339 F.3d 1352, (Fed. Cir. 2003).) Further, "drawings alone may provide a 'written description' of an invention as required by §112." Cooper Cameron Corp. v. Kvaerner Oilfield Prod., Inc., 291 F.3d 1317, (Fed. Cir. 2002).

In the present case, applicant's originally-filed FIG. 2 shows a first optical fiber OF1 which has a first end EP1, and only one optical device ONT1 that is connected to the first end EP1. Similarly, applicant's FIG. 2 shows a second optical fiber OF2 which has a second end EP2, and only one optical device ONT2 that is connected to the second end EP2.

Further, applicant's originally-filed specification teaches:

> "Next, method 300 moves to step 314 where the service technician removes the current ONT from the network end point, and then to step 316 to install the replacement ONT that has the upgraded service to the network end point." (See the first full paragraph on page 13 of applicant's specification.)

Thus, since applicant's FIG. 2 illustrates that only one optical device ONT is connected to the end of a fiber optic cable, and the specification teaches that one optical device ONT is first removed and then replaced with a replacement ONT, applicant's originally-filed specification provides adequate support for a claim that recites that only one optical device is connected to an end point at a time. As a result, claim 11 is believed to satisfy the requirements of the first paragraph of section 112.

The Examiner also argued that there is no support in the originally-filed specification for the limitation that the first optical device continues to receive network traffic until the second optical device responds to network traffic as recited by claim 18. However, as shown in applicant's as-filed FIG. 5, a current ONT (which can be read to be a first optical device) continues to receive an identity number message (which can be read to be network traffic) until a replacement ONT (which can be read to be a second optical device) responds to an identity number message (which can be read to be network traffic).

Thus, since applicant's FIG. 5 teaches that a current ONT continues to receive an identity number message until a replacement ONT responds to an identity number message, applicant's originally-filed specification provides adequate support for a claim that recites that a first optical device continues to receive network traffic until a second ONT responds to network traffic. As a result, claim 18 is believed to satisfy the requirements of the first paragraph of section 112.

The Examiner rejected claims 1-20 under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. Specifically, the Examiner argued that the originally-filed specification does not teach how the first and second optical devices are connected to the optical transmitter, and how the second optical device is connected as a replacement of the first optical device as recited by claims 1, 6, 11, and 18.

Applicant is respectfully unclear as to the rejection set forth by the Examiner as lack of enablement as argued above by the Examiner is a first paragraph rejection of the specification, not a rejection of the claims. Applicant notes, as discussed in MPEP §2172.01, that a claim may be rejected under the first paragraph of section 112 as not enabling if the claim has omitted material described in the specification as essential to the invention.

Applicant further notes, however, that in the present rejection the Examiner did not argue that the claims omitted material that was described in the specification as being essential to the invention, but instead argued that the specification omitted a necessary teaching. As a result, applicant assumes that the Examiner has set forth a first paragraph rejection of the specification, arguing that after reading through the specification, one skilled in the art would not understand how a current (first) optical device and a replacement (second) optical device are connected to the optical transmitter.

Applicant's specification, however, adequately enables one skilled in the art to make and use the invention without undue experimentation. As shown in applicant's FIG. 2, a current optical device ONT1 is connected to the end EP1 of a fiber optical cable OF1. Applicant's FIG. 2 also shows that the fiber optic cable OF1 is connected to an optical transmitter 112 via combiner 116, combiner 122, fiber optic cable 124, and splitter/combiner 132. Thus, applicant's FIG. 2 teaches how a current optical device ONT1 is connected to optical transmitter 112.

In addition, as noted above, the first full paragraph on page 13 of applicant's specification teaches that the current ONT is first removed from the network end point, followed by the installation of a replacement ONT to the network end point. In view of this teaching, one skilled in the art would understand that the current optical device ONT1 shown in applicant's FIG. 2 is first removed from the end EP1 of the cable OF1, and then the replacement ONT is installed to the end EP1 of the cable OF1.

Further, one skilled in the art would understand that the replacement ONT is connected to the optical transmitter via the intervening elements in the same manner that the current ONT was previously connected to the optical transmitter. Thus, from what can be determined, applicant's specification teaches how a current (first) optical device and a replacement (second) optical device are connected to the optical transmitter. As a result, it is believed that applicant's specification satisfies the enablement requirements of the first paragraph of section 112.

The Examiner rejected claims 1-10 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Examiner argued that the phrase "the second optical device being a replacement for the first optical device" in claims 1 and 6 is indefinite because when the first device is replaced by the second device it is unclear whether or not the first device is part of the claim limitation.

Applicant notes that claim 1 recites a structural element, a memory, which stores first and second identification numbers. The first and second identification numbers, in turn, represent first and second optical devices, respectively, that are associated with a network end point. Claim 1 also recites the relationship between the first and second optical devices, namely that the second optical device is a replacement for the first optical device. Each of these recitations is definite and unambiguous.

Applicant also notes that claim 1 does not recite replacing the first optical device with the second optical device. Thus, since claim 1 does not recite replacing the first optical device, there can be no issue in claim 1 regarding the status of the first optical device after the first optical device has been replaced by the second optical device. In addition, the discussion of claim 1 also applies to claim 6. As a result, claims 1-10 are believed to satisfy the requirements of the second paragraph of section 112.

The Examiner, citing MPEP §2172.01, rejected claims 1-20 under 35 U.S.C. §112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements. Specifically, the Examiner argued that the omitted structural cooperative relationships are the connections of the first and second optical devices to the optical transmitter.

Applicant notes, however, that claim 1 does not recite an optical network where an optical transmitter and first and second optical devices are recited as claim elements which must have a recited cooperative relationship. Instead, claim 1 recites an optical line terminal device that has a memory that stores first and second identification numbers. The first and second identification numbers, in turn, represent first and second optical devices, respectively, that are associated with a network end point.

Thus, since the first and second optical devices are not recited as claim elements, but instead further define the first and second identification numbers stored in the memory, there is no requirement to recite a cooperative relationship between the first and second optical devices and the optical transmitter. In addition, the discussion of claim 1 also applies to claim 6.

Applicant further notes that a structural cooperative relationship can only be omitted when first and second claim elements are recited without reciting any relationship between the first and second claim elements. However, it is not possible to omit a cooperative relationship to a claim element that has not been

recited in the claims. For example, a claim that recites a first device and a second device that is connected to the first device can not be rejected for failing to recite a cooperative relationship with a third device if the claims do not recite the third device.

In the present case, claims 11 and 18 are method claims that do not recite an optical transmitter. As a result, it is not possible for claims 11 and 18 to omit a cooperative relationship to a claim element which has not been recited in the claims. As a result, claims 1-20 are believed to satisfy the requirements of the second paragraph of section 112.

The Examiner rejected claims 1-17 under 35 U.S.C. §103(a) as being unpatentable over applicant's prior art FIG. 1 in view of Nakaishi (U.S. Patent Publication No. 2002/0021472 A1). For the reasons set forth below, applicant respectfully traverses this rejection.

Claim 1 recites, in part:

> "a memory having a plurality of first memory cells that store a first identification number and a second plurality of memory cells that store a second identification number, the first identification number representing a first optical device that is associated with a network end point, the second identification number representing a second optical device that is associated with the network end point, the second optical device being a replacement for the first optical device."

In rejecting the claims, the Examiner pointed to applicant's prior art FIG. 1 as teaching a memory that stores a number (an active identity number) that identifies a first optical device that is associated with a network end point. The Examiner conceded that applicant's prior art FIG. 1 does not teach that the memory also stores a number that identifies a second optical device that is associated with the network end point, but argued that it would be obvious to do so.

The Examiner next pointed to FIGS. 4 and 13 and paragraphs 0045-0047 and 0071-0072 of the Nakaishi reference as teaching an optical network unit (ONU) that has a second optical device (a backup PON circuit 111), and then argued that a controller in the optical line terminal (OLT) inherently stores a number that identifies the second optical device (the backup PON circuit 111) so that the controller can communicate with the second optical device.

As shown in FIG. 4, the Nakaishi reference teaches an optical network that includes a series of ONUs (ONU#1-ONU#N), and an OLT 100 that is connected to the ONUs (ONU#1-ONU#N) via a series of optical couplers 103/104. Further, the Nakaishi reference also teaches that each of the ONUs (ONU#1-ONU#N) includes a primary PON circuit 110/120, a backup PON circuit 111/121, and a selector 112/122. (See also paragraphs 0045-0047 of Nakaishi.)

Applicant, however, has been unable to find any discussion in the Nakaishi reference that teaches or suggests that a controller in OLT 100 inherently stores a number that identifies a backup PON circuit 111/121 in one of the ONUs (ONU#1-ONU#N) so that the controller can communicate with the backup PON circuit 111/121.

As taught by the Nakaishi reference in paragraphs 0057-0059 (with reference to FIG. 8), during normal operation, in step S2, OLT 100 outputs non-bridged signals NB to each of the ONUs (ONU#1-ONU#N) which, in turn, responds by outputting reply signals NBi and NBj to OLT 100 in step S3. When a transmission path has been severed, OLT 100 detects that both of the reply signals NBi and NBj were not received.

When this occurs, in step S7, OLT 100 outputs a switch confirmation signal SC to each of the ONUs (ONU#1-ONU#N) which, in turn, responds by outputting reply signals SCi and SCj to OLT 100 in step S8. Following this, Nakaishi teaches that OLT 100 transmits a switch requirement signal SR to each of the ONUs (ONU#1-ONU#N) in step S11.

In addition, as further taught in paragraphs 0060-0061 of Nakaishi, an ONU will not switch from its primary PON circuit 110/120 to its backup PON circuit 111/121 if its primary PON circuit 110/120 and its backup PON circuit 111/121 both received the switch confirmation signal SC. On the other hand, the ONU will switch from its primary PON circuit 110/120 to its backup PON circuit 111/121 if its primary PON circuit 110/120 did not receive the switch confirmation signal SC, but its backup PON circuit 111/121 did receive the switch confirmation signal SC.

Thus, the controller in OLT 100 does not communicate individually with a primary PON circuit 110/120 or a backup PON circuit 111/121, but instead broadcasts the signals to both the primary PON circuit 110/120 and backup PON circuit 111/121 in each of the ONUs (ONU#1-ONU#N) (see identifier 31 in FIG. 5B of Nakaishi).

Since the controller broadcasts the signals, the controller has no need to communicate individually with a primary PON circuit 110/120 or a backup PON circuit 111/121. Further, since the controller has no need to communicate individually with a primary PON circuit 110/120 or a backup PON circuit 111/121, the controller has no need to store an identifier.

With respect to inherency, this "may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. Continental Can Co. USA, Inc. v. Monsanto Co., 948 F.2d 1264, 1268 (Fed.Cir. 1991). Thus, since the controller has no need to store a number that identifies a primary PON circuit 110/120 or a backup PON circuit 111/121, the controller does not inherently store an identifier that identifies "the second optical device."

With respect to FIG. 13, Nakaishi teaches a similar optical network that utilizes a single optical coupler 108 and optical switches 106/107 in lieu of optical couplers 103/104. (See paragraphs 0071-0072 of Nakaishi.) Applicant, however, can find nothing in the discussion of FIG. 13 that teaches or suggests that a

controller in OLT 100 ever communicates individually with the primary PON circuits 110/120 and the backup PON circuits 111/121 of the ONUs (ONU#1-ONU#N).

As noted above, since the controller in OLT 100 has no need to communicate individually with a primary PON circuit 110/120 or a backup PON circuit 111/121, the controller has no need to store an identifier and, therefore, does not inherently store an identifier that identifies "the second optical device."

Thus, since Nakaishi fails to teach or suggest a controller that inherently stores a number that identifies "the second optical device" (backup PON circuit 111/121), claim 1 is patentable over applicant's prior art FIG. 1 in view of Nakaishi. In addition, since claims 2-5 depend either directly or indirectly from claim 1, claims 2-5 are patentable over applicant's prior art FIG. 1 in view of the Nakaishi reference for the same reasons as claim 1.

In addition, claim 6 is patentable over applicant's prior art FIG. 1 in view of the Nakaishi reference for the same reasons as claim 1. Further, since claims 7-10 depend either directly or indirectly from claim 6, claims 7-10 are patentable over applicant's prior art FIG. 1 in view of the Nakaishi reference for the same reasons as claim 6.

With respect to claim 11, this claim recites:

> "periodically sending a first message to an end point to be received by a first optical device, the first message including a first identification number;
> "determining whether the first optical device has failed to respond to the first message a predetermined number of times; and
> "sending a second message to the end point to be received by a second optical device when the first optical device fails to respond the predetermined number of times, the second message having a second identification number that represents the second optical device, only one optical device being connected to the end point at a time."

In rejecting the claims, the Examiner pointed to applicant's prior art FIG. 1, and twice to page 6, lines 15-22 of applicant's specification, as teaching that when a

network end point is to be added to a network, i.e., when a new user is to be added to the network, the active identity number of the optical device to be connected to the network is added to the memory table, and a message with the active identity number is periodically sent to the to-be-added optical device to determine if the to-be-added optical device has come on line. The Examiner then argued that it would have been obvious to periodically send out a message to another optical device to determine if this optical device responds to a predetermined number of messages in order to bring the to-be-added optical device on line.

It is unclear, however, how sending a message to an ONT that is already connected to the network, and then determining if the ONT already connected to the network responds to the messages, would in any way assist in bringing a new user and a new ONT on line. From what applicant can determine, the process for adding a new user to the network is unrelated to determining the status of the ONTs already connected to the network.

As a result, claim 11 is patentable over applicant's prior art FIG. 1 in view of the Nakaishi reference. In addition, since claims 12-17 depend either directly or indirectly from claim 11, claims 12-17 are patentable over applicant's prior art FIG. 1 in view of the Nakaishi reference for the same reasons as claim 11.

The Examiner rejected claims 18-20 under 35 U.S.C. §103(a) as being unpatentable over applicant's prior art FIG. 1 in view of Nakaishi and further in view of Daudelin et al. (U.S. Patent No. 6,591,389 B1). For the reasons set forth below, applicant respectfully traverses this rejection.

Claim 18 recites:

> "A method of servicing a network, the network having a first optical device associated with a network end point, the first optical device having a first identification number, the method comprising:
> "associating a second identification number with the network end point so that the first optical device continues to receive network traffic until the second optical device responds to network traffic, the second identification number representing a second optical device that is a replacement for the first optical device; and
> "dispatching a technician to the network end point to service the network end point."

In rejecting the claims, the Examiner pointed to applicant's prior art FIG. 1 as teaching an identification number that is associated with a network end point. In addition, the Examiner pointed to FIGS. 5A-5C and 6A-6B and paragraphs 0050-0051, and argued that the Nakaishi reference teaches assigning identification numbers to the optical devices (the primary PON circuits 110/120 and the backup PON circuits 111/121 of the ONUs (ONU#1-ONU#N)).

However, as discussed above, Nakaishi does not teach or suggest assigning identification numbers to the primary PON circuits 110/120 and the backup PON circuits 111/121 of the ONUs (ONU#1-ONU#N). As shown in FIG. 5B of Nakaishi, the message area of a downstream PLOAM cell includes an identifier 31 that identifies the cell as a broadcast cell (a cell which is broadcast to each of the ONUs (ONU#1-ONU#N)), and an identifier 32 that identifies a PST message. In addition, the message area of the downstream PLOAM cell includes an identifier 33 that identifies the line number of the system (primary or backup), and K1 and K2 bytes 34/35 that appear to carry the non-bridged signal NB, the switch confirmation signal SC, and the switch requirement signal SR.

As shown in FIG. 5C of Nakaishi, the message area of an upstream PLOAM cell includes an ONU identifier 36 that identifies the ONU that originated the

message, and an identifier 37 that identifies a PST message. In addition, the message area of the upstream PLOAM cell includes an identifier 38 that identifies the line number of the system (primary or backup), and K1 and K2 bytes 39/40 that appear to carry the non-bridged reply signal NBi or NBj, and the switch confirmation reply signal SCi or SCj.

As a result, there is nothing in the downstream or upstream PLOAM cells that individually identify the primary PON circuit 110/120 and the backup PON circuits 111/121 of an ONU. Thus, Nakaishi does not teach or suggest assigning identification numbers to the primary PON circuits 110/120 and the backup PON circuits 111/121 of the ONUs (ONU#1-ONU#N).

As a result, claim 18 is patentable over applicant's prior art FIG. 1 in view of the Nakaishi reference and further in view of the Daudelin et al. reference. In addition, since claims 19-20 depend either directly or indirectly from claim 18, claims 19-20 are patentable over applicant's prior art FIG. 1 in view of the Nakaishi reference and further in view of the Daudelin et al. reference for the same reasons as claim 18.

Further, it is assumed that if the ONUs (ONTs) in applicant's prior art FIG. 1 were modified to incorporate the teaching of Nakaishi, each ONU (ONT) in the modified system would now have both a primary and a back PON circuit as in Nakaishi as opposed to having only a single PON circuit, and would receive signals in the same manner as taught by Nakaishi.

In further rejecting the claims, the Examiner argued that one skilled in the art would be motivated to continue to send network traffic to a first optical device (a primary PON circuit 110/120) until a second optical device (a backup PON circuit 111/121) responds to network traffic in order to provide uninterrupted communication services to the end users.

The Nakaishi reference, however, fails to teach or suggest this type of operation. As noted above, during normal operation, in step S2, OLT 100 outputs

non-bridged signals NB to each of the ONUs (ONU#1-ONU#N) which, in turn, responds by outputting reply signals NBi and NBj to OLT 100 in step S3. When a transmission path has been severed, OLT 100 detects that both of the reply signals NBi and NBj were not received.

Thus, during normal operation, Nakaishi does not send network traffic to a first optical device (a primary PON circuit 110/120) until a second optical device (a backup PON circuit 111/121) responds to network traffic, but instead interprets a response from both the primary and backup PON circuits to indicate that the system is operating normally.

In other words, Nakaishi does not stop sending network traffic to a first optical device (a primary PON circuit 110/120) when a second optical device (a backup PON circuit 111/121) responds, but continues sending network traffic to both devices. Thus, the Nakaishi reference does not teach continuing to send network traffic to a first optical device (a primary PON circuit 110/120) until a second optical device (a backup PON circuit 111/121) responds to network traffic.

Further, one skilled in the art would not be motivated to alter the operation of Nakaishi, such that network traffic to a first optical device (a primary PON circuit 110/120) is stopped when a second optical device (a backup PON circuit 111/121) responds because to do so would cause the system to switch from the primary PON circuit to the backup PON circuit the first time that OLT 100 output a non-bridged signal NB to the ONUs. As a result, claims 18-20 are patentable over applicant's prior art FIG. 1 in view of the Nakaishi reference and further in view of the Daudelin et al. reference for these additional reasons.

New claim 21 recites:

"a memory to store a number of first identifiers that represent a number of ends of a number of cables in a network, a number of second identifiers that represent a number of first network devices that are connected to the ends of the cables, and a third identifier that represents a second network device, each second identifier being associated with a first identifier, the third identifier being associated with a second identifier so that the end of a single cable has a first identifier, an associated second identifier, and an associated third identifier; and

"a processor connected to the memory to generate information to be sent to the ends of the cables which have a first identifier and an associated second identifier."

From what can be determined, applicant's prior art FIG. 1 and the Nakaishi reference do not teach or suggest storing second and third identifiers of first and second optical devices, respectively, so that the end of a single fiber optic cable has a first identifier, an associated second identifier, and an associated third identifier. As a result, claim 21 is patentable over applicant's prior art FIG. 1 in view of the Nakaishi reference. In addition, since claims 22-23 depend either directly or indirectly from claim 21, claims 22-23 are patentable over applicant's prior art FIG. 1 in view of the Nakaishi reference for the same reasons as claim 21.

New claim 24 recites:

"A method of servicing a network having an end of a cable and a functioning network device connected to the end of the cable, the method comprising:

"associating a replacement network device to the functioning network device only when the functioning network device is to be removed so that the functioning network device continues to receive network information;

"detecting when the functioning network device no longer receives the network information; and

"sending the network information to the replacement network device when the functioning network device no longer receives the network information."

From what can be determined, applicant's prior art FIG. 1 and the Nakaishi reference do not teach or suggest associating a replacement network device to a functioning network device only when the functioning network device is to be removed so that the functioning network device continues to receive network information. As a result, claim 24 is patentable over applicant's prior art FIG. 1 in view of the Nakaishi reference. In addition, since claims 25-27 depend either directly or indirectly from claim 24, claims 25-27 are patentable over applicant's prior art FIG. 1 in view of the Nakaishi reference for the same reasons as claim 24.

Thus, for the foregoing reasons, it is submitted that all of the claims are in a condition for allowance. Therefore, the Examiner's early re-examination and reconsideration are respectively requested.

Respectfully submitted,

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APPENDIX A

APPENDIX B

Annotated Sheet

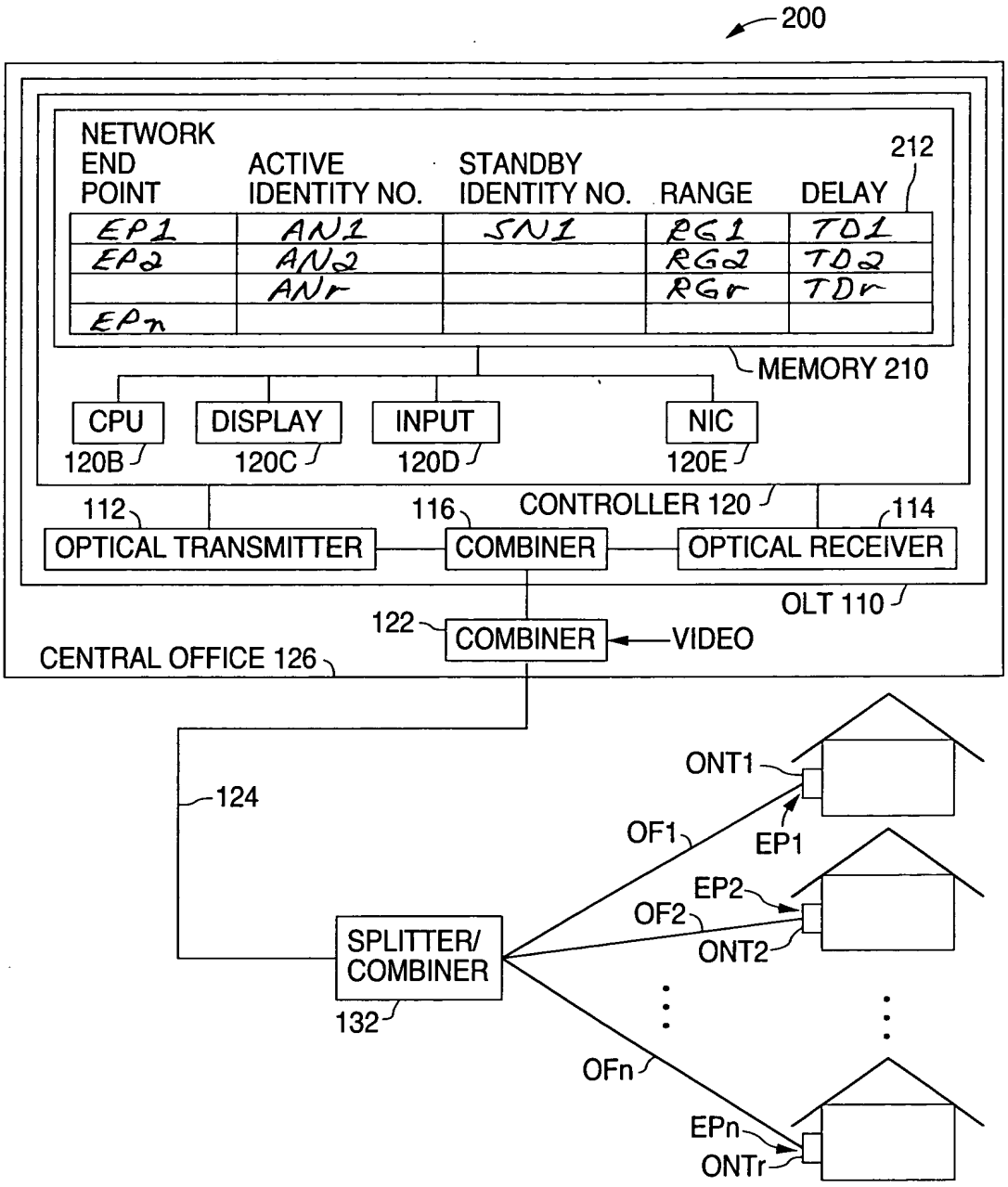

FIG. 2